

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

Claim 1. (Original) A method of identifying an inhibitor of plant peptide deformylase activity, said method comprising:

- (a) incubating a catalytically an effective amount of said peptide deformylase with a suitable substrate, and a candidate inhibitor compound, and
- (b) detecting and quantifying the enzyme product formed.

Claim 2. (Original) The method according to claim 1 further comprising comparing the amount of enzyme product formed in the presence and absence of said candidate inhibitor.

Claim 3. (Original) The method according to claim 1 wherein said peptide deformylase is derived from *Arabidopsis thaliana*.

Claim 4. (Original) Herbicides which act by inhibiting plant peptide deformylase and which are identified by the method of claim 1.

Claim 5. (Original) A method of identifying herbicides which comprises testing a compound in a peptide deformylase inhibition assay such that a measurable reduction of plant peptide deformylase is observed, and subjecting the compound to an *in vivo* test for herbicidal activity.

Claim 6. (Original) Herbicides identified by the method of claim 5.

Claims 7-12. (Canceled)

Claim 13. (Original) An antibody directed against peptide deformylase isolated from *Arabidopsis thaliana*.

Claim 14. (Original) A transgenic plant, wherein said transgenic plant is engineered to be resistant to an inhibitor of plant peptide deformylase.

Claim 15. (Original) A herbicidal composition comprising an inhibitor of plant peptide deformylase and a herbicidally acceptable surfactant.

Claim 16. (Original) The composition according to claim 15, wherein said inhibitor is actinonin.

Claim 17. (Original) The composition according to claim 16, wherein said herbicidally acceptable surfactant is Tween-20.

Claim 18-19. (Canceled.)

Claim 20. (Original) An isolated and purified polynucleotide sequence encoding an amino acid sequence of a plant peptide deformylase.

Claim 21. (Original) The polynucleotide sequence according to claim 20, wherein the plant peptide deformylase is derived from *Arabidopsis thaliana*.

Claim 22. (Original) An isolated amino acid sequence encoding a plant peptide deformylase polypeptide.

Claim 23. (Original) The amino acid sequence according to claim 22, wherein the plant peptide deformylase polypeptide is derived from *Arabidopsis thaliana*.

Claim 24. (Original) A recombinant vector comprising the polynucleotide sequence of claim 21.

Claim 25. (Original) A recombinant vector comprising the polynucleotide sequence of claim 20.

Claim 26. (Original) A host cell transformed with the recombinant vector of claim 24.

Claim 27. (Original) A host cell transformed with the recombinant vector of claim 25.

Claim 28. (Original) A host cell transfected with the recombinant vector of claim 24.

Claim 29. (Original) A host cell transfected with the recombinant vector of claim 25.

Claim 30. (Original) A method of producing a plant peptide deformylase polypeptide comprising:

- (a) transforming a suitable host cell with a recombinant vector comprising a polynucleotide sequence encoding a plant peptide deformylase polypeptide, the gene being operably linked to suitable regulatory sequences; and
- (b) growing the transformed cell under conditions where the peptide deformylase is expressed.

Claim 31. (Original) The method of claim 30 wherein the plant peptide deformylase polypeptide is derived from *Arabidopsis thaliana*.

Claim 32. (Original) A plant peptide deformylase polypeptide produced by the method of claim 31.

Claim 33. (Original) A plant peptide deformylase polypeptide produced by the method of claim 30.

Claim 34. (New) A method of producing a transgenic plant resistant to a peptide deformylase inhibitor, said method comprising:

- (i) transforming a plant cell with a polynucleotide sequence encoding an amino acid sequence of a plant peptide deformylase;

(ii) determining which transformed plant cells are resistant to peptide deformylase inhibitors by identifying which transformed plant cells overexpress the peptide deformylase gene; and

(iii) producing a transgenic plant from the transformed plant cells identified to be resistant to peptide deformylase inhibitors.

Claim 35. (New) The method of producing a transgenic plant resistant to a peptide deformylase inhibitor according to claim 34, wherein said polynucleotide sequence is a peptide deformylase gene or part thereof.

Claim 36. (New) The method of producing a transgenic plant resistant to a peptide deformylase inhibitor according to claim 34, wherein said polynucleotide sequence is a peptide deformylase chimeric gene.

Claim 37. (New) A herbicidal composition comprising an inhibitor of plant peptide deformylase activity which is identified by the method of claim 1.

Claim 38. (New) A herbicidal composition comprising an herbicide compound identified by the method of claim 5.